

CLAIMS

1. A direct methanol fuel cell system comprising:
 - an aqueous solution tank for storing methanol aqueous solution;
 - a fuel tank for storing methanol fuel to be supplied to the aqueous solution tank; and
 - a fuel cell stack supplied with the methanol aqueous solution from the aqueous solution tank for generating electric energy through electrochemical reactions;

wherein the fuel tank and the aqueous solution tank are disposed above the fuel cell stack.
2. The direct methanol fuel cell system according to Claim 1, further comprising an air pump disposed below the fuel cell stack, for supplying the fuel cell stack with air containing oxygen.
3. The direct methanol fuel cell system according to Claim 1, wherein the fuel tank and the aqueous solution tank are disposed side by side generally at a same height,
 - the direct methanol fuel cell system further comprising:
 - a first pipe extending downward from the fuel tank;
 - a second pipe extending downward from the aqueous solution tank; and
 - a fuel pump disposed below the fuel tank and the aqueous solution tank, and connected with the fuel tank via the first pipe, and with the aqueous solution tank via the

second pipe,

the fuel pump pumping the methanol fuel supplied from the fuel tank via the first pipe to the aqueous solution tank via the second pipe.

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4. The direct methanol fuel cell system according to Claim 1, wherein the fuel tank is disposed above the aqueous solution tank,

the direct methanol fuel cell system further comprising:
10 a pipe connecting the fuel tank and the aqueous solution tank; and

an addition valve placed in said pipe and capable of opening and closing.

15 5. The direct methanol fuel cell system according to Claim 1, further comprising a heat exchanger for a heat-exchanging operation to the methanol aqueous solution outputted from the aqueous solution tank before sending to the fuel cell stack,

20 the heat exchanger being disposed on a side of the fuel cell system.

6. The direct methanol fuel cell system according to Claim 5, further comprising a gas-liquid separator for gas-liquid separation of moisture content discharged from the fuel 25 cell stack; and

a water tank for storing water obtained by the gas-liquid separation,

the gas-liquid separator being placed between the fuel cell stack and the heat exchanger.

7. The direct methanol fuel cell system according to Claim 5, wherein the heat exchanger includes a heat exchange pipe for guiding the methanol aqueous solution outputted from the aqueous solution tank to the fuel cell stack, the gas-liquid separator including a gas-liquid separation pipe for guiding moisture content discharged 10 from the fuel cell stack to the water tank, the gas-liquid separator having at least part of the gas-liquid separation pipe faced to at least part of the heat exchange pipe.

15 8. The direct methanol fuel cell system according to Claim 6, further comprising:
an air pump disposed below the fuel cell stack for supplying the fuel cell stack with air containing oxygen; and
20 a controller disposed on a side of the air pump for controlling a concentration of the methanol aqueous solution outputted from the aqueous solution tank to the fuel cell stack, the heat exchanger and the gas-liquid separator being 25 opposed to the controller, sandwiching the air pump.

9. The direct methanol fuel cell system according to Claim 6, wherein the gas-liquid separator includes a gas-liquid

separation pipe capable of letting moisture content from the fuel cell stack flow down gravitationally.

10. The direct methanol fuel cell system according to Claim 5, wherein the fuel tank includes a side surface provided with a first fitting,

the aqueous solution tank including a side surface provided with a second fitting to mate the first fitting.

10 11. The direct methanol fuel cell system according to Claim 1, further comprising:

a drain pipe connected with the water tank for draining water from the water tank; and

15 a cap attachable to and detachable from a discharging end of the drain pipe for preventing water from discharging.

12. The direct methanol fuel cell system according to Claim 1, further comprising:

20 a drain pipe connected with the water tank for draining water from the water tank;

wherein the drain pipe is flexible and has a pivotable discharging end, for the drain pipe discharging end to be placed above an upper surface of the fuel cell stack.